THE

VETERINARY JOURNAL

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MARCH, 1927.

"ALDERSHOT COMMAND" HOUNDS.

OUR frontispiece is the reproduction of a photograph of a Meet of the Aldershot Command Hounds, a private pack maintained by the officers of the Aldershot Command, taken outside the Royal Army Veterinary Corps Officers' Mess.

The pack was formed in 1902 and the names of the previous masters include Colonels W. Winwood and Malise Graham.

Hounds hunt three days a week in the country round Aldershot, two days a week being devoted to the fox and one day to drag hunting. Two separate packs of hounds are maintained, the hunt pack consisting of 22 couple and the drag of eight couple.

The present master and huntsman is Major C. H. S. Townsend, R.A.V.C., and the Secretary, Major C. Davenport, R.A.V.C.

The fields vary, but on a popular day there will often be up to a hundred out, chiefly officers and their wives, and the sport is usually good.

The Corps is to be congratulated on the sporting honour to which these two officers have been elected.

Editorials

ROYAL VETERINARY COLLEGE APPEAL FUND.

As a means of furthering the appeal of the Royal Veterinary College for the sum which is required for re-building, we are, with the Publishers' kindly permission, inserting in this number of THE VETERINARY JOURNAL (where we think subscribers will be interested), one of the authorised forms which have been issued under the authority of the Governors.

We ask those who have already subscribed to be good enough to send this printed copy (of which more can be obtained on application to the Secretary Royal Veterinary College, Camden Town) with a personal note, to some client who is likely to be interested enough to give practical help; and we would particularly suggest that the paragraph on the second page, contrasting the amount given by the Governments of France and Germany in a single year with that which has reached our own Veterinary College in the form of State aid during the past hundred years, should be emphasised and underlined.

The way in which Veterinary Science in Great Britain has kept on an equal footing with the progress made in other continental countries is worth thinking over, as it demonstrates in a very marked manner that prominent trait in the English character which always comes out best under what look like almost insuperable difficulties.

Continental Colleges receive very large grants from their respective governments, and a professorial position is a state appointment in which a man who is scientifically inclined can rest assured of a position for life, with a retiring pension in accordance with his needs. Under such conditions he is able to work without the worry of wondering how he is going to provide for his old age; and the conditions under which his work is performed, in buildings which we should consider palatial in this country, are the envy of visitors who have taken advantage of the opportunities which have been given to them to travel and see for themselves.

The London College which is to rise out of the dilapidated present building must be worthy of the British nation, if each and all of us who are members of the profession (and especially those who own it as their Alma Mater), will put forward every effort to get the money required, they can rest assured that those who will have the spending of it in designing and equipping of the buildings for the different departments, will see that it is spent wisely.

For those who will go a step further to help the scheme in addition to subscribing whatever they can afford, collecting cards can be obtained on application to the Secretary at Camden Town, and it

is hoped that they will be taken advantage of to collect sums both small and large, amongst those of their *clièntele* who love animals and who know the benefits which Veterinary Science can confer in the alleviation of suffering.

THE VETERINARY JOURNAL, too, is opening its columns to subscribers and will be pleased to forward to the Treasurer of the Fund any sums which may be directed to the Editor, care of the Publishers (Messrs. Bailliere, Tindall and Cox), 8, Henrietta Street, Covent Garden, W.C.2.

SPECIAL CLEAN MILK NUMBER.

WE draw the attention of our readers to a subject which is of particular importance to the veterinarian at the present moment, and to which we are intending to devote at least a whole number of our periodical in the shape of the forthcoming April issue, which will be given up entirely to the subject of Clean Milk.

It is a subject of widespread interest of very great importance to every branch of the community, and we have obtained authoritative articles from men who are in practical touch with the subject from varied points of view. In addition to articles from members of our own branch of medicine, we have writers whose qualifications are those of the human side, and others who are engaged in the passage of the milk from producer to consumer.

It is really astonishing when one thinks that such a valuable food has been so neglected in the past and that it should have been allowed to become the transmitter of disease to those for whom it should be the most beneficial, namely, the infant and the invalid. At last, however, there is evidence that this country is really beginning to awaken to the importance of the subject, and the veterinary profession must take its place in the van of progress.

Although it is some distance ahead, it is of sufficient importance to justify a preliminary announcement that a joint discussion of the Guildford Branch of the B.M.A. and the Royal Counties' Branch and the Southern Counties' Branch of the N.V.M.A., on the subject of Clean Milk, is to take place at the Surrey County Hospital on May 19th, when all members of the medical and veterinary profession will be welcome.

Considerable legislation has been brought to bear upon this subject during the past few years, and private enterprise has also done a great deal, but there is evidence that what has taken place in the past is only a preliminary to the compulsory measures which are likely to be enforced in the future; and it is well for us, as a profession, who are widely interested in the subject of Public Health, to be prepared and to have the subject well in hand.

General Articles

THE BIRTH OF A VETERINARY SURGEON.

By R. E. ALEXANDER, M.R.C.V.S.,
Weymouth.

Mr. Trevor F. Spencer, in the course of an amusing speech at the annual dinner of the Central Division of the N.V.M.A., remarked amidst laughter that "Veterinary surgeons were not made. They were born; and if they were not born, there wouldn't be any."

This observation set me pondering on that great mystery: "the origin of veterinary surgeons." The fact that I myself am a member of that profession is still a source of wonderment to me. My first ambition was to be an engine-driver; my last to be a journalist. One of the minor horrors of the Great War was a book of poetry I published, and I remember selling about a hundred in one day to my admiring comrades. Modesty bids me state that we were outward-bound upon a long voyage, and that reading matter was at a premium on the ship. A list of the chief nematodes of ruminants would have been disposed of equally as successfully.

I can picture the born veterinarian, at the tender age of two years, amputating a limb from his teddy bear. Perhaps he would first sterilise the site of operation with bread-and-milk in place of iodine, and one can imagine his fond mother saying, "Willie is a born veterinarian; he has such technique." But I hope there are not many such. Imagine the father of that child a few years later repeating to him that old rhyme of "how the cow jumped over the moon." His little boy would rebuke him in a childish treble, "That is impossible, Father. The extensor muscles of such a ruminant would be incapable of propelling such a heavy mass over the lunar sphere."

Three factors are responsible for the origin of veterinary surgeons; the first being environment.

We may include here those reared in agricultural surroundings, and those whose fathers have been in practice before them. A boy who has accompanied his parent upon his rounds, and inhaled that peculiar aroma of Gentian Pulv. and Nuc. Vom. which permeates every surgery, from his youth upwards, often enters a Veterinary College as a matter of course.

In the second group, which I suppose to be a rare one, we find that individual who "is master of his fate, and captain of his soul." On leaving school his father pleads with him to enter his old established business as a cotton broker. "No, Dad," says the boy with a steadfast light in his blue eyes. "I intend to become a veterinary surgeon." "What a life, breaking cotton," runs the thread of his thoughts.

Correspondence upon "Why I became a Veterinary Surgeon" would make interesting reading. I have little data to go upon, so I will have to take myself as an example of the third group, which contains those who entered the profession through force of circumstances, or destiny; call it what you will.

When I was nine years old I knew the body was composed of cells containing protoplasm. In reply to relatives, finding me poring over "Yeo's Textbook of Physiology," I said that it was "horribly interesting." Fourteen years later I found it more horrible still; especially near examination time. Was this the veterinary bias showing itself? I don't think so. I studied Herchel's Astronomy with equal zest, but I am not at Greenwich.

I did not know that there was a veterinary profession before the war. Once as a boy I took my dog to the local unqualified dog-doctor. I was filled with excitement because I went in a cab. My terrier had broken his leg, and half-an-hour elapsed before the bone was set, the dog meanwhile shrieking with agony. I returned home with a white face, and that awful scene is engraved upon my memory now. The dog man paid several visits during the following weeks, until a peculiar sweetish smell was noticed proceeding from the leg. The animal was destroyed because the limb had mortified, and this was my sole experience of canine surgery.

During the War I saw little of the veterinary profession. I only remember seeing one veterinary officer, and that under the following curious circumstances.

Our Hussar regiment was stationed on the Indian plains, and one morning I found my horse exhibiting a severe wound in the region of the near hock. I therefore led the animal about a quarter of a mile from the stable to see the veterinary officer, whom I found in a species of compound talking to the farrier sergeant-major.

Now my animal was a gaunt, rawboned, chestnut gelding, well over 17 hands, and, unfortunately, only equipped with the usual stable halter. As the V.O. stepped forward to examine the wound, my horse turned about and commenced to walk away. I could not account for this unseemly behaviour, for his expression was quite placid. Maybe he despised medical advice, or perhaps he thought of the gram in his feed bowl. At all events, he paced away with a slow dignified gait, and as he was stronger than I, it was necessary for me to accompany him. It was an absurd situation, so I held on to the head-rope and tried to look as if I had changed my mind and strolled in by accident.

"Hi there," they called. "Where are you going? Come back."

" I'm afraid I can't stay now," I stammered. " Some other time," and left them staring after me open-mouthed. The horse returned me to the stable quite safely, and then dismissed me.

So I saw my first veterinary surgeon for but a fleeting minute, and for some time afterwards I blushed inwardly when the word " veterinary " was mentioned. I believe my lapse was put down to the tropical heat.

Then one day I read a glowing article in *Tit-Bits*, written by a veterinarian's assistant, describing the glorious open-air life, the visits to farms, and the charms of dispensing. That, coupled with the fact that I knew a little about horses, and nothing about anything else, made me a veterinary surgeon.

Possibly there are similar cases. Looking back, I do not regret it. It is a fine feeling when a stubborn case responds to treatment, or a rather desperate " op " proceeds without a hitch. Most of us will never be excessively rich, but we do some good in the world, which is better than merely making money. And then, at the end of a particularly heavy day, how comforting it is to remove boots laden with the persuasive evidence of a real hard day spent in divers farmyards, to put on cosy carpet slippers, and stretch one's legs in front of a roaring fire.

It's a good life, and to the man who was " born for it " it is " the best."

THE PRESENT-DAY POSITION OF THE VETERINARY PROFESSION IN THE UNITED STATES.

By NELSON S. MAYO, M.S., D.V.S.,
Chicago, U.S.A.

A MARKED change for the better has taken place in the veterinary profession in the United States during the past score of years. This has been evolved, partly by legislation and partly by the establishment of higher educational requirements for entrance to veterinary colleges, as well as the marked improvement in the curricula of the existing colleges.

Practically all the states have enacted laws governing veterinary practice that have largely eliminated the non-graduate practitioner. The fact that federal legislation has put the U.S. Army Veterinary Corps on a satisfactory basis has also been helpful.

The post-war depression in the agricultural and livestock industries was severely felt by veterinarians, but it had one beneficial effect of eliminating a number of the least fit. The one factor, however, that has probably done more to elevate the profession has been the efficient service rendered, not only to the client, but also in Public Service, in

the control of transmissible animal diseases and the protection of the Public Health by supervision of animal food products and suppression of diseases transmissible to man. This work has been carried out by the private practitioners, State and Federal livestock Sanitary Authorities. In the post-war depression but few students entered the Veterinary Colleges. The number has increased a little in the past few years, but the attendance is still very low, a total of 602 students in all the colleges for the year 1926. There are approximately only 10,000 veterinarians in the United States, and it will be noted that the number graduating will not be sufficient to replace the annual professional loss. There is a feeling among the profession that the Federal Bureau of Animal Industry has extended its activities so that it trespasses in the field of the private practitioner.

In a number of cases "County Agents" and "Farm Advisers" have exceeded their authority and interfered in the domain of the veterinarian. This condition, however, is being rapidly eliminated. There is a growing tendency for farmers and stockmen to employ County or District Veterinarians to devote their whole time to the control and eradication of transmissible animal diseases in that locality.

While there is still a marked depression in the farming industry that affects the country practitioner, the present condition of the veterinary profession in the United States is good and the future looks bright. Small animal practice in the cities is excellent; stockmen are demanding more and better veterinary service; and the Colleges are giving excellent training to the young men who are entering the profession.

MILITARY AGRICULTURE.

By Major FRANK CHAMBERS, O.B.E., F.R.C.V.S.
Formerly O.C. 3rd Reserve Veterinary Hospital, Aldershot.

In looking through some old notes a few days ago I came across the record of six months' production from the regimental gardens of the 3rd Reserve Veterinary Hospital at Aldershot during the time I held the command of this unit. We took over a piece of inferior land, and with the aid of implements purchased out of P.R.1 funds, and the painstaking efforts of two C3 gardeners, kept the whole camp supplied with fresh vegetables, etc. It would be unnecessary to point out the value of fresh vegetables as an addition to the regulation army diet in war time, especially with regard to the psychological effect on the men, the majority being conscripts, in rising from their table with that comfortable feeling of repletion!

With their midday meal almost always two vegetables were served, whilst with their tea appeared lettuce, radishes or celery. The

excellent feeding at No. 3 Reserve Hospital was to a great extent responsible for the total absence of any serious crime during the time I was there.

Here is the table of quantities received from the regimental gardens for six months ending December 31st, 1917 :—

Greens,	Cabbages,	Peas,	Lettuce,	S. Onions,
1,296 lbs.	564 lbs.	275 lbs.	124 lbs.	50 doz.
Beans,	Turnips,	Swedes,	Beet,	Veg. Marrow,
1,698 lbs.	3,604 lbs.	1,344 lbs.	972 lbs.	3,748 lbs.
	Carrots,	Parsley,	Celery,	
	2,830 lbs.	22 lbs.	15½ doz.	

On Hand :—

Carrots,	Parsnips,	Swedes,	Beetroot,	Potatoes,
25 cwt.	45 cwt.	6 cwt.	6 cwt.	25 cwt.

We also kept several pigs and fed them on the swill, not to mention a goose which, however, survived several Christmas days ; no one having the heart to kill him. He was enormously fat, and I often wonder what became of him on demobilisation !

HEAT-STROKE, AND HEAT-SYNCOPE.

By Major H. ALLEN, R.A.V.C.,
Remount Depot, Mona, Punjab, India.

Pathological effects of high atmospheric temperatures are only evident when there is a marked amount of atmospheric humidity. In Heat-Stroke there is extremely high fever, and in Heat-Syncope symptoms of collapse and low bodily temperature are evident. Both are brought about by the same cause, *i.e.*, high atmospheric temperatures associated with moderate or high humidity.

Some authorities recognise the action of heat and sun's rays as being separate, and further, that heat may produce a syncopal condition of fever, while the sun's rays may also cause syncope and fever. Some suspect the presence of an acute specific fever as being concealed in the above disease. Others consider the symptoms as toxic in origin, so that we have four theories : (1) Caloric, (2) Actinic, (3) Microbic and (4) Toxic.

High atmospheric temperatures with sufficiently high atmospheric humidity, and more or less stagnation of the air are capable of producing Heat-Stroke and Heat-Syncope. A high dry temperature can be more easily borne than when it is moist, as evaporation from the surface practically ceases in a moist atmosphere.

When the humidity of air is increased by one per cent. the loss of the radiation and conduction is raised 32 per cent., while an increase of 25 per cent. in the humidity is equal to an increase of 2° C. in the

external air (F. Smith). It is the heat rays, and not the ultra-violet rays which cause ill effects. The ultra-violet rays, when absorbed by the body, are converted into heat.

Violet and ultra-violet rays are not important factors, they cause sunburn and subsequent pigmentation in man.

The lowering of the body temperature depends on the evaporation of perspiration, hence the relative humidity of the atmosphere plays an important part on the effect of sunlight.

Absorption of heat by the surface of the earth, and radiation from it, must also be considered as playing a part in the effects of heat. In the tropics there is a great radiation of heat from the surface of the earth which augments the direct influence of the sun.

Man may lose water at the rate of five per cent. of his body weight on a hot day.

Muscular work in the hot weather increases the output of water as much as six times. A horse requires a constant supply of water. A thirsting animal dies when it has lost 10 per cent. of its body weight in water. Fifty per cent. of its protein and the whole of its fat will disappear before death from starvation ensues.

A horse receiving water only may live 30 days without food.

A horse will live three days without food or water.

Six to ten gallons of water daily should be allowed for a horse in camp in a moderate climate, but more in the tropics.

A man requires three and a half to five pints of water daily. When there is cardiac weakness or lack of vaso-motor control in addition to deranged heat regulation, then Heat-Syncope and not Heat-Stroke appears.

In cases of death from Heat-Stroke the essential pathological change is the partial coagulation of the globlin found in the cells of the body. This coagulation takes place in voluntary and cardiac muscles, causing respiratory and cardiac failure, while later changes take place in the nerve cells (especially in the medulla) leading to chromatolysis.

A large number of horses suffering from Heat-Stroke were admitted into hospital in June, July, August and the early part of September, about ten days being the average time required for the treatment of those which recovered.

The maximum atmospheric temperature was 119° (July 7th), and the minimum 67° (June 4th), whilst the rainfall varied between 0.3 (June 6th) and 3.68 (July 7th).

GENERAL SYMPTOMS.

Loss of appetite for first couple of days after admission to hospital. Progressive dullness and marked depression, drooping head, fixed

eyes and dilated pupils, uncertain gait, respirations laboured and accelerated, nostrils dilated, and in some cases epistaxis from one or both nostrils. Mucous membranes injected in the early stages, and later on becoming very pale, and in some cases of a yellowish tinge. Excessive temperature (106-107°) which dropped to normal in about three or four days. Pulse quick and weak and in some of the cases palpitation of the heart.

Three cases were admitted to hospital with the premonitory symptom of slight spasmodic colic.

A few cases occurred whilst out at riding-work.

One case developed laminitis in all four feet ; a few cases developed inco-ordination of movement behind, but the symptoms passed off in about a week's time ; a few cases developed acute tendonitis of the fetlock region.

All the cases lost a lot of condition and appear to take a long time to pick up. The cases all occurred amongst horses and no mules were affected. Over 40 blood smears were examined with negative results, and confirmed at the Muktesar Laboratory.

With few exceptions all the cases occurred in the Home Charge.

The Home portion of the Depôt is very heavily wooded, and has an extensive amount of cultivation, and consequent irrigation.

This year high atmospheric temperatures were associated with an exceptional amount of atmospheric humidity.

General Line of Treatment.

All cases were placed in comfortable loose boxes, with a plentiful supply of drinking water, in which there was a handful of Sutoo (parched ground barley and gram).

Liberal supply of green forage and bran diet.

Enemata of cold water, and cold water applications were made to the cranial region in some cases.

If the high temperature (106-108°) persisted for three days, intravenous injections of hydrobromate of quinine (30 grains) were administered. Some cases developed alarming symptoms of over-stimulation and collapse after injections of 30 grains of hydrobromide and bihydrobromide of quinine, evidently due to weakened cardiac action, diminished blood-pressure, and affection of the centre of respiration. All the cases, however, resumed the normal in about half an hour.

Hypodermic injections of camphorated oil were administered when cardiac stimulation was needed.

A NOTE ON THE NATURE OF THE RABIES VIRUS IN THE ANGLO-EGYPTIAN SUDAN.

By S. C. J. BENNETT, B.Sc., M.R.C.V.S.,
Assistant Veterinary Research Officer, Sudan Government.

THE rabies virus has in recent years received some attention in tropical Africa on account of its supposed differences from that occurring in Europe and elsewhere. Much information has become available from the French African colonies, but although outbreaks of rabies have occurred at intervals in the Anglo-Egyptian Sudan the properties of the virus have not been studied. Thus, when the disease appeared here early in 1926, having presumably originated in the West, attempts were made to obtain samples of virus for study in Khartoum. Before describing the few experiments performed it is convenient briefly to review the observations of French workers in the West.

The existence of rabies in West Africa was apparently not recorded until 1912, when Bouffard* published his observations in Upper Senegal-Niger from 1909 onwards. At that time African rabies was supposed to affect canines only and not to be transmissible to man. The disease largely assumed the " dumb " form and in the laboratory, although rabbits could be infected by subdural inoculation the virus could not be exalted by rabbit passage beyond the stage of producing death in about 15 to 20 days. Later, Heckenroth† in 1918 described an outbreak of furious rabies in dogs, in the course of which human beings, both European and African were bitten and died. Rabbit inoculations were performed in the usual way and three types of results were obtained: (1) the rabbit remained healthy; (2) the rabbit succumbed, but it was impossible to continue the series in other rabbits; or (3) if serial passage was possible the virus was not much exalted by passage. The standard virus of the Pasteur Institute in Paris was passaged at the same time and killed regularly in 15 to 16 days, whereas the Senegal virus killed irregularly at periods varying between 13 and 21 days. The provisional conclusion was that a European strain of virus had recently gained access and that it was this imported strain that was responsible for the cases transmitted to man; the African virus not communicable to man was considered to be existing in canines at the same time.

A more complete study was attempted by Remlinger, Leger and Teppaz‡ in 1923, when comparative tests were carried out with a Tangier virus, identical in all respects with the European, and a strain obtained locally. The " European " virus maintained its killing power and the local virus became almost its equal when passaged through rabbits. Seeing, however, that the local virus had been secured on

the main railway line it was suspected that it might be an imported European strain, thus explaining its almost equal facility for becoming exalted on passage.

Other notes have been published from time to time by various observers which, similarly to those discussed, incline to the recognition of a special tropical African virus whose chief characteristics are first that it cannot be exalted by rabbit passage, or at any rate not to the degree attainable by European viruses, and second, that it is probably not transmissible to man, nor, as far as can be ascertained from the literature, to animals other than canines. Human cases have been ascribed to infection with imported "European" virus, and one judges that it is almost with surprise that Teppaz[1], as recently as 1921, reports the case of a human being in the hinterland who was bitten by a dog and ultimately died of rabies. The patient had even been advised not to go to Dakar for treatment, in spite of his having expressed a desire to be treated. It is, therefore, hoped that the following short note will throw further light on the nature of the "African" rabies virus.

In the outbreak in this country there are some important points to be appreciated before considering the results of the laboratory work. In the first place there is no doubt that the virus concerned was Central African in origin, since all diagnosed cases of rabies occurred in Kordofan Province, which is geographically so situated that any rabies introduced into it must have come from the West or South-West. That it did not come from the East is certain, since the White Nile constitutes a sufficient barrier and no case of rabies was diagnosed East of this river; the Libyan Desert to the North and the swamps to the South exclude these two directions as a source of ingress. That it was not introduced by imported dogs is equally certain, since the importation of dogs except from the British Isles is prohibited, and imported dogs are all known individually, belonging as they do to British officials. One may thus be certain that a truly "African" virus was recovered.

A second important observation is that all cases observed in animals were of the "furious" type, diagnosis, further, being established in a calf, a dog, a donkey and a camel.

Third, and probably most important, human beings were affected.

Finally, it is almost if not quite certain that only one "strain" of virus was at issue. It was not possible to trace the sequence of cases and refer them to a common source, but all cases occurred in one district (El Obeid), the first case being diagnosed in January 1926, and the fourth and last in March, 1926.

Two samples of the virus were recovered for study in the laboratory,

and these were passaged directly from rabbit to rabbit by subdural inoculation until both series broke down. The details of the passages are most conveniently studied by reference to the accompanying charts.

SAMPLE 1.

Origin.	Dog.
Passage No. 1.	Rabbit 3....died 25 days.
,, ,, 2.	Rabbit 16.... ,, 17 ,,
,, ,, 3.	Rabbit 22.... ,, 9 ,,
,, ,, 4.	Rabbit 25.... ,, 29 ,,
,, ,, 5.	Rabbit 34....lived.

SAMPLE 2.

Origin.	Calf.	
Pass. No. 1.	Rabbit 24....died 14 days.	
,, ,, 2.	Rabbit 27.... ,, 14 ,,	
,, ,, 3.	Rabbit 33.... ,, 14 ,,	
,, ,, 4.	Rabbit 35..died 14 days.	Rabbit 36..died 14 days.
,, ,, 5.	Rabbit 42.. ,, 14 ,,	Rabbit 43.. ,, 15 ,,
,, ,, 6.	Rabbit 45.. ,, 12 ,,	Rabbit 44.. ,, 12 ,,
,, ,, 7.	Rabbit 47.. ,, 11 ,,	Rabbit 46.. ,, 3 ,, *
,, ,, 8.	Rabbit 50.. ,, 11 ,,	Rabbit 48.. ,, 11 ,,
,, ,, 9.	Rabbit 52.. ,, 11 ,,	Rabbit 51.. ,, 3 ,, *
,, ,, 10.	Rabbit 53.. ,, 14 ,,	Rabbit 54.. ,, 14 ,,
,, ,, 11.	Rabbit 57.. ,, 3 ,, *	Rabbit 58.. ,, 3 ,, *

* The cause of death could not be determined in the rabbits not dying from rabies. In this country as in West Africa it has, however, been noticed that in the hot weather very little interference of any kind with rabbits is apt to cause death in a few days.

That the rabies virus was being passaged was confirmed by the detection of Negri bodies in all rabbits of both series. Typical large bodies were not visible after the second passage, but in material fixed and stained after the technique of Manouelian and Viala,§ no lengthy search was necessary for the detection of coccus-like cell inclusions in all cases.

Referring to the passage charts it will be seen that Sample No. 1 behaved in a similar manner to some West African viruses—to those viruses, in fact, that are considered to be essentially "African." It is unfortunate that sufficient rabbits could not be obtained to carry out all passages in duplicate, but even with single rabbits the five passages served to show that the virus was killing irregularly and showed no signs of becoming exalted. Sample No. 2, however, was very regular in its lethal period, but it also showed no signs of becoming

exalted by passage, herein resembling West African viruses studied by Heckenroth and by Remlinger, Leger and Teppaz, and considered by them probably to have been imported European strains.

As has already been shown, there is every reason for assuming that the two samples here studied are really from a single "strain," having been recovered from the same town in the same isolated outbreak. Further, even though the virus or viruses were considered to be "African" on account of their properties on rabbit passage the other aspects of the outbreak were essentially "European"; four species of animals in addition to man became infected and furious symptoms were the rule.

From the foregoing observations one can only conclude that, in this part of tropical Africa at any rate, its behaviour in rabbits is not a reliable indication of the nature of a rabies virus, and since its different behaviour in rabbits has been adduced as evidence of the existence of a peculiar African strain of virus, this conception should be discarded and all rabies in Africa should be regarded as potentially transmissible to all animals, including man.

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DISTEMPER.

By G. MAYALL, M.R.C.V.S.,
Bolton.

Some reflections gathered over a period of 30 years in dealing with distemper in dogs may be of interest. So long as the specific organism has not been discovered, present-day vaccines or sera as a means of prevention or cure of the malady are discounted or handicapped. The prevention of the disease is influenced favourably by good hygiene, and believing as I do that the complaint is more akin to influenza than anything else, by keeping the dog physically fit, by protecting him from cold and wet, by drying him when he comes in wet through, and observing and keeping healthy the membranes of the eyes and nose. Hair around the jaws and eyes ought to be kept clean and sometimes clipped off, and the oral cavity be maintained in a healthy state. Sometimes a bloodshot and irritable condition of the conjunctiva heralds the approach of plainer symptoms of distemper. I

am quite sure that the incubation period of the disease may be three weeks or longer. The care of the nose and throat in dogs has not received as much attention as it deserves. Through these avenues practically all the elements which nourish and sustain the body are taken into the canine system. We know the fondness of the dog for pondering and sniffing at aromatic spots, the more old-fashioned the smell the better he likes it. A nasal mucous membrane which performs its proper function healthily is the most effective defence against bacterial attack. The secretion from the lymphoid tissue in the mucous membrane of the nose and the white blood corpuscles attack entering micro-organisms and surround, incorporate and destroy them. Micro-organisms are generally inhaled in the form of dust, and with a weakened nostril prepared for their reception and propagation, a veritable germ incubator is produced.

As regards the development of distemper I believe that almost invariably in cases that progress broncho-pneumonia arises. In many dogs I have seen in the early stages there has been what may be described as more or less respiratory stasis. The dog is slightly indisposed, listless and to the untrained eye just a bit sleepy. I have a theory that at this time the toxins are gathering strength in the lungs previous to their dissemination. Hence as a preventive eliminant a good respiratory stimulant and antiseptic combined with an intestinal antiseptic is indicated.

After much thought and use of many drugs and preparations I have found the following as a stock medicine to give me the most success and satisfaction. For a dog, spaniel size, Scheele's hydrocyanic acid $\frac{1}{4}$ to $\frac{1}{2}$ a minim, salicylic acid 3 to 5 grains, liquor ammon. acet. 8 to 10 minims, water 1 drachm. This dose is given three times daily, and is varied according to size and age of the dog. If preferred the dilute hydrocyanic acid of the British Pharmacopœia may be used, but I generally make mine up from the Scheele's acid with the aid of an eye dropper as measurer.

It may be only a concidence, but I have never known a case of chorea develop in my practice after the use of this medication. I believe that it is essential to success that every case of distemper in hospital should receive the personal care and supervision of the veterinary surgeon as much as possible. The discharges from the eyes and nose should be removed and burnt. Warm castor oil, hazeline and boric acid lotion, and astringent lotions make good eye remedies. When there is no moisture and warmth coming in the air from the lungs, keep gathered up secretious fluid, dryness occurs, and the formation of crusts round the nostrils. These should be carefully removed, and I then like to get a dog over an open basin or sink and

trickle some 1 per cent. solution of ammonium chloride, or eusol solution, down the nostrils, the head being raised and afterwards depressed. It is surprising what stuff sometimes comes away from the nostrils after this procedure, and it tends to considerably reduce the period of the nasal catarrh. Thereafter and at night time I always anoint the dog's nose with camphorated vaseline and occasionally sprinkle eucalyptus oil on his bedding. Cod liver oil and warm and nutritious food (in my last case not yet gone home, I used Hooker's malted milk tablets very largely) during the convalescent stage are very desirable.

I do not like to see a dog with distemper lying with discharges blocking, drawn in and extruded as he breathes, or caking the nostrils, any more than I care to see dry discharges surrounding or glueing up the eyes, and for the latter I use plain vaseline in the first stages, and not yellow ointment. If asked how soon a dog with distemper is likely to get well if he goes on favourably, I never put the time as less than three weeks.

I have used many vaccines in the complaint, but cannot ascribe any special virtue to them; some have seemed to accentuate the symptoms. In dogs lying morose, apathetic, with constipated bowels and not eating, I have used glycerine enemas and camphor oil injections with benefit. In my last case, besides the stock medicine, I have named, I used some "Malfin," a combination of silicic acid, formic acid, sozoiodide of soda and chinosol as made up by the International Serum Co., but gave it orally and not hypodermically, because the use of the needle seemed to greatly upset the patient. The dog has done well.

As regards chorea I have not had many good results, but some of my patients have recovered by prolonged doses of cod liver oil, fat meat and milk, and bathing and swimming in sea water. Two or three years in some cases have elapsed before recovery has occurred.

Clinical Articles

TWO RESULTS OF THE CRIB-BITING OPERATION.

By Lt.-Col. H. C. DIBBEN,
Royal Army Veterinary Corps.

The following results of operations on two crib-biters subjected to the operation demonstrated by Major Townsend, O.B.E., M.C., may be of interest.

A grey light draught gelding on admission was debilitated and a confirmed crib-biter. Weight before operation, 9 cwt. 1 qr. 7 lbs.; weight on discharge to duty 11 cwt. 14 lbs. Two days after the

operation the animal attempted to crib-bite and failing gave it up.

A chestnut mare rider. Weight before operation, 9 cwt. 7 lbs.; weight on discharge to duty, 10 cwt. 1 qr. 14 lbs. This animal, though a habitual crib-biter has made no attempt to do so since the operation.

Before the operation this animal was a bad rider and an uncertain jumper. Since the operation she has become a good rider and jumps well, whilst she has completely lost an exaggerated " peacock " carriage of the head which she had beforehand.

In neither case was there any marked distortion after recovery.

AN INTERESTING EYE OPERATION IN THE HORSE.

By Lt.-Col. H. C. DIBBEN,
Royal Army Veterinary Corps.

A HORSE was brought to a hospital in India that had been operated on for removal of an intraocular filaria.

The anterior chamber of the eye was full of floccules of blood-tinged pus, there was a greyish yellow film over the whole of the cornea and the blood vessels of the eye were very congested.

As the patient had little or no power of vision it was decided to attempt to clear the anterior chamber.

The patient was cast and the eye cocained. A quarter inch incision was made, sufficiently high up to be covered by the upper eyelid, near the outer canthus.

With a 5 cc. syringe normal saline solution was syringed into the chamber with sufficient force to wash out the contents. This was repeated until the floccules were all washed out. The chamber was then filled with saline solution and the patient allowed to rise. Potassium iodide in a drench was given twice daily for a week and the eye sprayed with zinc. sulp. lotion, x grs. to the oz. four times daily.

The eye cleared up, also the film on the cornea, leaving only a speck towards the outer canthus.

The sound eye was covered and the patient was ridden over small obstacles and appeared to have normal vision.

The above procedure was adopted successfully in two other cases subsequently.

A BROOM BRISTLE IN THE ABDOMINAL WALL.

By Major J. R. HODGKINS, D.S.O., F.R.C.V.S.,
Royal Army Veterinary Corps.

A MULE belonging to a Pack Battery was admitted to a hospital in October with a swelling on the abdominal wall.

The swelling was situated on the left side of the middle line slightly posterior to the sternum, and had increased until it extended the

whole length of the abdomen. Hard in character at first, it gradually softened into an abscess at the anterior part. The abscess burst and a large amount of pus (about a pint) came away. The mule was then sent to this hospital for treatment. The wound was enlarged for drainage and the usual dressings followed. Progress was good, and the animal gradually recovered, being fit for duty in December.

In February the swelling recurred, in the same position, and the mule was again sent to hospital. An abscess formed and was opened. The wound healed to a small sinus and then resisted further treatment. The animal was put down and a search made, without success, for a cause. The wound was opened extensively and curetted. Healing took place and the mule was discharged in April.

On May 1st the animal was back again with the same trouble, and the wound was again opened up and curetted. On May 13th, being prepared for operation, an extensive exploration was made, but again no cause was found for the abscess formation. Healing proceeded to a point, but the wound refused to close completely.

In September the wound was reopened and completely cut out, and exploration pushed to the point of risk. The whole train of circumstances repeated themselves.

As it was uneconomical to keep the animal further under treatment, it was cast and destroyed in October.

POST-MORTEM EXAMINATION.—The suppurating channel was carefully laid open and followed through a heavy layer of fat to the external surface of the peritoneum. The amount of pus was slight but running into little side pockets. At the extreme end of the sinus were two calcareous garden-pea sized bodies. These did not seem a satisfactory explanation. There was a chronic local peritonitis about three inches square in extent, corresponding to the site of the wound.

The peritoneum was then stripped. Lying on its posterior surface, parallel to the long axis of the body, was a bristle, four inches in length, from a stable broom.

MORAL.—There is always a cause.

FIVE SEVERE CASES OF VERMINOUS ENTERITIS AND ANEURISM IN HORSES.

BY MAJOR C. DAVENPORT, O.B.E., F.R.C.V.S., R.A.V.C.,
The Royal Army Veterinary School, Aldershot.

DURING the winter and spring of 1925-26 there was a somewhat severe outbreak of schlerostomiasis in the Army Remount Depôts of Arborfield Cross and Chiddingfold. This was of special interest, not only because extensive outbreaks of the disease are comparatively

rare among army horses, but because of the extreme severity of many of the cases encountered.

A unique opportunity was thus afforded for a fresh study of the condition. Unfortunately, owing to movement, the veterinary officers who handled the outbreak have been unable so far to record their experiences, but it is hoped that it may be possible for them to furnish the clinical record at some future date.

Early in the outbreak, as shown in the first case recorded, the assistance of this laboratory was sought for diagnostic purposes, and the present article is concerned with the laboratory investigation which followed.

LABORATORY PROCEDURE.

The method adopted in the examination of fæcal matter at this laboratory in all cases was as follows :—

1. A small portion of the sample was set aside in a glass mortar and emulsified with water. This was then strained through a small mesh sieve.

2. A portion of the filtrate so obtained was flooded on to a large sheet of white filter paper, and a search made for larval forms of worms with the aid of a magnifying glass.

3. The remainder was employed for the isolation of ova according to Sheather's Sugar Floatation technique (1). After centrifuging, sugar solution was added to the sediment, the whole well-shaken and recentrifuged. Cover slip preparations were then made and examined.

4. The bulk of the fæcal matter was placed in the top rack of a series of graduated sieves and well-washed under a tap. Search was then made for mature forms of worms.

CASE 1.—A light draught roan gelding, aged 4½ years, at No. 3 Remount Depôt, Arborfield Cross, Berks.

The horse was taken ill at grass on November 20th, 1925, and was admitted to the sick lines in poor condition and suffering from severe diarrhœa. He received the usual doses of Ol. tereb. and Ol. lini as an anthelmintic, followed the next day by Tinct. ferri perchlor. and acid sulph. in ol. lini. The symptom of diarrhœa, however, persisted, the animal becoming weaker and more emaciated day by day.

The case was one of three, more or less similarly affected at this depôt about the same time, and was first seen by the writer on December 2nd, 1925, having then been in the sick lines 12 days. The horse was in poor condition, tucked up and showed marked depression and the usual symptoms common to a case of prolonged diarrhœa. There was no evidence of abdominal pain. Temperature

normal. Rectal examination revealed nothing except an extremely watery condition of the fæces.

The history of the case and the symptoms shown suggested either poisoning or parasitic infection. The former possibility was investigated without any promising results, for although two other animals, as already mentioned, were similarly affected, they were but three of a large number kept under identical conditions of management and feeding.

A sample of fæces was removed to the laboratory at this School for examination. The results obtained were as under :—

Sieving.—This was hardly necessary owing to the watery nature of the material. No mature forms of worms were detected.

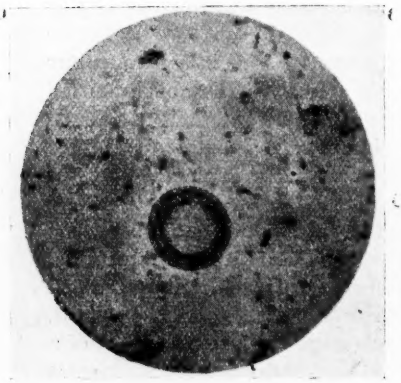

FIG. 1.—Ovum of ascaris equorum isolated by the sugar floatation technique.

FIG. 2.—Ova of strongylidæ isolated by the sugar floatation technique.

Sugar Floatation Technique.—A few larval nematodes were detected. Also a few ova of parasitic worms. Forage acari were remarkably numerous.

Examination of Filtrate on Filter Paper.—Numerous small nematode worms were readily seen with the naked eye, and were easily removed for microscopic examination by the aid of a magnifying glass and microscopic needle. These parasites, which were about .1 mm. long, were subsequently identified for me by Mr. T. W. M. Cameron, who kindly supplied the following report : " Fourth stage larvæ of several species of trichonema, the majority belonging to the ' insigne ' group, but a few other species not identifiable in the immature form."

Samples of fæces from this case taken and examined on December 3rd and 4th gave similar results.

The horse died on December 7th, 1925.

POST-MORTEM EXAMINATION.

Stomach.—Bots were numerous, many having perforated the mucous lining. The pyloric portion was acutely inflamed and in parts deeply congested.

Small Intestine.—A few slightly inflamed and injected areas.

Double Colon.—The lining membrane, particularly at the pelvic flexure, was greatly thickened, corrugated and of a slate green colour.

Ascaridæ and Strongylidæ.—None were detected.

Trichonema.—No mature forms seen. Fourth stage larvæ were swarming throughout the double colon. The lining membrane of this organ showed the vacated cysts and encysted larval forms of these worms in profusion throughout the length of this portion of the bowel, giving the appearance which has been so well described as "sprinkled with black pepper."

Anterior Mesenteric and Cæcal or Colic Arteries.—No aneurisms.

I am indebted to Captain E. S. W. Peatt for the particulars of the history of this case and the pathological material supplied.

CASE 2.—A black light draught gelding, aged 5½ years, belonging to the Royal Army Service Corps, Aldershot; purchased in England in July, 1925, and joined the Arborfield Cross Remount Depôt the same month, where he probably became infected. In December, 1925, the horse was issued as a remount to the R.A.S.C. and was at that time in reasonable condition. While at the Remount Depôt he had suffered from a prolonged attack of catarrhal fever, but had not been sick otherwise.

In January, 1926, the horse was admitted sick for debility and diarrhœa. The diarrhœa first showed on January 20th, and persisted in spite of all attempts at control.

On February 6th an anthelmintic draught was administered and was repeated on February 12th. No improvement followed, and the horse had now reached a stage of great emaciation. Parasitic worms do not appear to have been detected in the fæces at any time, although search for them was made (c.f. Case No. 1).

LABORATORY INVESTIGATION.—On February 14th a sample of the watery fæces was submitted to this laboratory for examination. Fourth stage larvæ of the genus trichonema were readily detected in a manner similar to that employed in the previous case.

The horse was destroyed when *in extremis* the next day.

POST-MORTEM EXAMINATION.

Stomach.—Bots were numerous. The pyloric portion was inflamed, being a deep claret colour.

Small Intestine.—The lining membrane showed several injected areas.

The Cæcum.—Externally the organ appeared inflamed. The regional lymphatic glands were enlarged and stood out prominently. The lining membrane was greatly thickened, corrugated and of a slate blue colour. Areas of slight ulceration or erosion were noted, and the whole suggested gangrene.

The Double Colon had evidence of inflammatory changes, and the lymphatic glands were prominent. On opening, the lining membrane was of a slate green colour, greatly thickened, and showed areas of ulceration and erosion. The ulcerated areas became more numerous in the posterior portion, and blood clots were detected beneath the mucous membrane.

The Single Colon.—The lining membrane was slate grey in colour, and contained a limited amount of watery fæces.

Ascaridæ.—About a dozen were found in the small intestine and cæcum.

Strongylidæ.—A few were detected. Larval forms were swarming in the aneurisms referred to below.

Trichonema.—Many mature forms were detected adherent to the bowel wall in the cæcum and double colon. The "black pepper markings" of cysts vacated by these worms involved the lining membrane of the cæcum and double colon very heavily. They were also present in the single colon, but became scarce in the rectum.

Anterior Mesenteric Artery.—An aneurism was present and contained larval forms of S. vulgaris.

Cæcal, Ventral and Dorsal Colic Arteries.—These were enlarged and showed aneurisms containing similar larval forms.

I am indebted to Major H. Kirby, R.A.V.C., for the history of this case, and the opportunity of making the *post-mortem* examination.

Case 3.—A four-year-old riding mare, purchased in Ireland in July, 1925, and sent to a Remount Depôt the same month. She was transferred to Chiddingfold Depôt in November and arrived at the latter place in poor condition, but was bright and fed well. She was stabled, allowed a liberal diet and exercised daily in hand. During the next two months slight colicky pains were shown from time to time, and diarrhœa was occasionally shown. The fæces were inclined to be exceptionally soft and were always offensive. Grain feeding predisposed to attacks of diarrhœa, and an inordinate liking for rock salt was shown.

No improvement in condition occurred, and the mare eventually died in an acute attack of colic on February 1st, 1926.

The carcase was extremely emaciated.

The Stomach contained a few bots, and the small intestine was slightly inflamed.

Colon and Cæcum.—The regional lymphatic glands were indurated and prominent, and externally the organ showed the usual purplish-blue discolouration associated with severe inflammation. The lining membrane was thickened, corrugated and of a deep slate green colour, and about a dozen ascaridæ were present.

Strongylidæ.—None were detected, but the aneurisms referred to below were swarming with larval forms.

The Anterior Mesenteric Artery appeared unaffected.

The Dorsal and Ventral Colic Arteries were greatly enlarged and stood out prominently on the surface of the bowel. On cross section the lumen was found to be sufficiently large to permit the passage of bowel scissors, but contained a mass of fibrinous material in which larval forms of S. vulgaris were present.

I am indebted to Major S. L. Slocock, R.A.V.C., for the details of the history of this case and the pathological material supplied.

CASE 4.—A six-year-old light draught mare belonging to the Arborfield Cross Remount Depôt, purchased in Ireland in July, 1925, and sent to the Remount Depôt the same month. She was sick with laryngitis for a short period, and on discharge was turned out to grass, where she remained until January, 1926. On January 5th she was admitted to the sick lines for loss of condition and diarrhœa. A vermifuge test was applied, but apparently without result. She continued to lose condition, and on January 31st a sample of fæces was submitted to this laboratory for examination. Mature forms of trichonema were demonstrated.

On February 10th the mare was transferred to this School for observation.

It was observed that she was in extremely poor condition, and that there was a very marked absence of muscle in the region of the neck, back and quarters. In addition, the coat was harsh and when moved at a trot she showed signs of great weakness.

Pulse 48; Temperature 102.8; and the membrane of the eye appeared normal in colour.

The fæces appeared normal, but an examination showed mature forms of trichonema present, ova of ascaridæ numerous, ova of strongylidæ scarce, but no larval forms of any sort.

First Test.—The case was diagnosed as one of severe helminth infection, and it was decided to ascertain in the first place what blood changes might exist in consequence of this infection. Accordingly on February 13th and 16th erythrocyte counts, leucocyte counts and differential leucocyte counts were made. The results were as follows:—

Erythrocytes	6,138,000 million per c.m.m.		
Leucocytes	8,120 thousand per c.m.m.		
of which :—		Polynuclear	= 64 per cent.
Large mononuclear	= 3 per cent.	Eosinophiles	= 3 ,,
Small mononuclear	= 26 ,,	Mast cells	= 4 ,,

Some degree of anæmia, therefore, existed, together with conditions of polynuclear leucocytosis, eosinophilia and basophilia.

Second Test.—Examinations of fæces carried out on 12th, 13th and 15th showed that ova of ascaridæ and mature forms of trichonema were numerous.

On February 16th, after 24 hours' starvation the mare was given a dose of 60 ccs. of carbon tetrachloride through a stomach tube (horse's weight = 861 lbs.). The dose was poured into the tube through a glass funnel and washed down with a small quantity of water afterwards. No purgative was given. The horse fed well in the evening and no toxic effects were shown.

All fæces were collected and examined.

A few ascaridæ were passed the day following dosage, and several more on the second day. Thereafter up to the date of death no more were seen.

The number of mature trichonema passed showed a considerable increase on the second day after dosage, but subsequently they were passed to about the same extent as before.

Ascarid ova were detected in the fæces up to the fifth day after dosage, but thereafter disappeared and did not reappear.

As will be seen later in the report on the post-mortem examination, this dose of carbon tetrachloride was successful in eliminating all ascarids from this horse.

Third Test.—As has been stated, the trichonema were but little affected by the anthelmintic dosage above described. It was decided, therefore, to try the effect of oil of chenopodium against these worms, particularly in regard to its effect in the advanced stage of the disease which this animal had now reached. It should be noted that this horse, although in an emaciated condition, was passing normally formed dung in contradistinction to the condition of superpurgation which had been so marked a feature of the disease in the first two cases recorded.

Accordingly on February 23rd, after 24 hours' starvation a dose of 3 drms. of oil of chenopodium was administered per stomach tube, followed immediately afterwards by a pint and a half of linseed oil. No toxic effects were shown.

No change in the dung occurred the following day, but on the

second day the droppings became soft, mushy and more yellow in colour. No real purging occurred.

It was now found that the isolation of ova by the sugar floatation technique was materially interfered with. Instead of a thin layer of sugar solution becoming attached to the under surface of the cover slip, a deep layer of oil and debris adhered in which it was impossible to distinguish any eggs. This interference lasted two days.

The number of trichonema passed increased somewhat for a few days, but considerable numbers of these worms continued to be passed up to the time of death. As will be seen later, large numbers of these worms were detected in the bowel on *post-mortem* examination of the case. The single dose of oil of chenopodium had thus but little effect on the fæcal content.

POST-MORTEM.—The case was destroyed on March 18th in a condition of extreme emaciation. Two days before destruction took place, the droppings became excessively offensive, although no diarrhœa occurred.

Stomach and Small Intestine.—There were a few slightly injected areas.

Cæcum.—The regional lymphatic glands were prominent. The lining membrane was thickened and of a dark claret colour.

Double Colon.—This was deeply injected, thickened and corrugated. The whole organ had a distinctly gangrenous odour.

Ascaridæ and Strongylidæ.—None were found in any part of the bowel. Larval forms of S. vulgaris were present in the aneurisms referred to below.

Trichonema.—Mature forms were numerous in the dorsal half of the double colon and in the single colon. The cæcum and double colon showed a heavy infestation with cysts of larval forms of these worms (black pepper markings).

Anterior Mesenteric Artery.—A well-marked aneurism was present.

Colic Arteries.—For about 18 inches at the pelvic flexure these arteries were greatly enlarged and stood out prominently on the surface of the bowel. The aneurism present showed S. vulgaris larval forms swarming.

CASE 5.—A six-year-old grey mare classified as a rider and belonging to the Remount Depôt at Arborfield Cross; purchased in Ireland in July, 1925, and joined the Remount Depôt the same month, where she was at grass from August to November. Diarrhœa was first shown on November 14th, but after the administration of an anthelmintic draught, the droppings again became normal. Following this, occasional attacks of diarrhœa occurred from time to time, but no worms were ever detected in the fæces passed. By

January 14th the mare had fallen away in condition very greatly. On February 4th a sample of fæces was submitted to this laboratory for examination, with the following results: A few mature trichonema present, and also a few larval forms. A few ova of ascaridæ and strongylidæ were also detected.

On admission to the School the mare was in slightly worse condition than the last described case. There was a complete wasting of muscle in the region of the neck, back and quarters. She showed great weakness when trotted up and swayed badly at the turn. The pulse was 80, the temperature 105.6°, and she appeared anæmic.

During the next few days the temperature made a gradual return to normal. The droppings were soft and offensive, and inclined to be fluid. Daily examinations of the fæces showed mature trichonema and ova of ascaridæ constantly present.

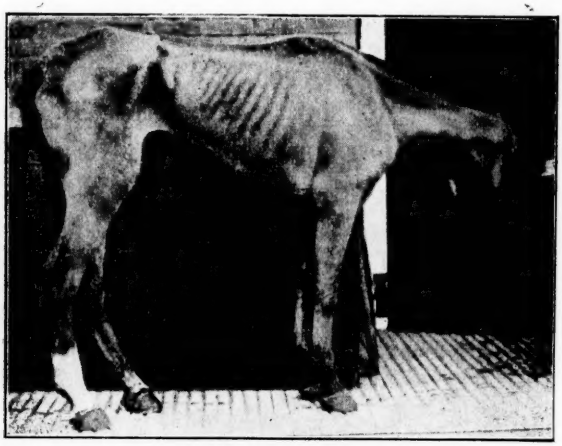

FIG. 3.—Showing the condition of the grey mare (Case No. 5) before destruction.

First Test.—It was found impossible to make reliable erythrocyte and leucocyte counts. A differential leucocyte count, however, gave the following result:—

Large mononuclear = 6 per cent. Small mononuclear = 13 per cent. Polynuclear = 75 per cent. Eosinophiles = 5 per cent. Mast Cells = 1 per cent.

Second Test.—On February 16th, after 24 hours' starvation, a dose of 60 ccs. carbon tetrachloride was administered in a similar manner to the last case. (Horse's weight = 805 lbs.) The mare fed

well in the evening, no alteration in temperature was shown and no toxic effects were seen.

The following day the fæces became excessively watery and offensive, and 25 ascarids were passed, including also a large number of mature trichonema. No larval forms of the latter were seen.

Ascarid eggs disappeared from the fæces by the fifth day after dosage, but mature trichonema continued to be passed as before. As is shown below, the dose of carbon tetrachloride was efficient in eliminating all ascarids, but was of little value against trichonema.

Owing to the condition of the mare no experiments with oil of chenopodium were carried out. The mare was destroyed in extreme emaciation on February 18th.

POST-MORTEM EXAMINATION.

Stomach.—The pyloric portion was slightly congested.

Small Intestine.—This was congested in parts, and there was slight ulceration in the region of the attachment to the stomach.

Cæcum. The regional lymphatic glands were enlarged.

Double Colon.—The lining membrane was inflamed throughout its whole length. The pelvic flexure for about one foot was gangrenous and stinking, greatly thickened and covered with a yellow necrotic membrane. Blood supply to this portion of the bowel appeared to have been completely arrested.

Ascaridæ.—None were present in any portion of the bowel.

Strongylinæ.—Many were present adherent to the mucous membrane of the cæcum.

Trichonema.—Cysts of larval forms involved the mucous membrane of the cæcum and double colon to an extreme degree. The single colon was similarly affected, but to a less extent. They were not present in the rectum.

Anterior Mesenteric Artery.—No aneurism was present.

The Colic Arteries.—These were greatly enlarged and stood out prominently, giving the appearance of a cord or rope buried beneath the fascia. Aneurisms containing larvæ of S. vulgaris were present. As already noted, the involvement of these arteries had led to a definite necrotic condition of the pelvic flexure.

SUMMARY.

1. The very serious form which helminth infection in young horses may assume is well shown in the extreme degree of emaciation produced in all the cases described and the severe nature of the pathological changes.

2. The degree of involvement of the lining membrane of the

cæcum and double colon by larval forms of trichonema in all five cases was extreme.

3. The passage of larval forms of trichonema in the two cases of diarrhœa first described is of special interest, particularly in view of the fact that mature forms of the worms were not detected *ante-mortem*.

The method of demonstration which has been recorded is simple and could easily be applied to any case of unexplained diarrhœa in young horses, particularly where helminth infection is suspected but mature forms of worms are not in evidence.

4. The extent of the involvement of the bowel vessels by aneurisms due to larvæ of S. vulgaris in four of the five cases was remarkable. The location of these, namely in the dorsal and ventral colic arteries, is of interest in view of the fact that no obvious aneurism of the anterior mesenteric artery existed in two out of the four cases. This extreme involvement of the colic arteries and the escape of the anterior mesenteric vessels appears to be at variance with the ordinary text-book description of the condition.

5. Carbon tetrachloride in large doses was well tolerated, in spite of the weakened condition of the animals. The drug showed a 100 per cent. efficiency against ascarids, but proved of little value against trichonema. This is in accordance with the recorded experiences of other workers.

6. Following medication with carbon tetrachloride all ascaridæ and ascarid ova disappeared from the fæces within six days.

7. In cases in which oil was employed as a purgative following oil of chenopodium, the isolation of ova from fæces by Sheather's sugar floatation technique was interfered with for two days.

8. A condition of slight eosinophilia existed in two of the cases examined.

REFERENCE.

(1) The detection of worm eggs in the fæces of animals. A. L. Sheather. *Journal of Comparative Pathology and Therapeutics*, Vol. XXXVI, No. 1,023, page 71.

FOUR CASES OF EQUINE RABIES WITH FAILURE TO PROTECT WITH ANTI-RABIC VACCINE.

By M. CRAWFORD, M.R.C.V.S.,
Government Veterinary Department, Colombo.

A RABID dog entered a large stable in Colombo on July 30th, 1926, and in passing along a row of open-fronted horse-boxes, bit some of the horses. Leaving the stable he entered an adjoining garden, where he bit a cow on the muzzle, and also a dog. He was then destroyed.

On examining the horses in the stable, three were found showing

bite wounds on the muzzle. The wounds were washed and treated with silver nitrate by the owner. It was decided to vaccinate these three horses with anti-rabic-vaccine. The method of vaccination used for human beings with success at the Colombo Pasteur Institute is the injection on each of 14 consecutive days of an emulsion of fresh brain and spinal cord of rabbits killed when moribund as the result of injection of fixed virus. The vaccine is prepared according to Semple's method, and the emulsion used is 1 per cent. by weight of brain and cord in ½ per cent. Carbol Saline, the daily dose being 5 c.c.

As no information as to the quantities of such an emulsion suitable for horses was available, it was decided to use 10 times the dose for a man. Ten times the human dose would be 50 ccs., As this was a large quantity to inject on each of 14 days, it was decided to give 10 times the dose by using a 5 per cent. emulsion instead of a 1 per cent., and to give 10 c.cs. of this 5 per cent. emulsion. Such an emulsion was prepared, and the first injection was given two days after the horses had been bitten. Each of the three horses received 10 c.cs. of the 5 per cent. emulsion daily for 14 consecutive days.

On August 27th one of the horses (No. 1) was observed to be peculiar in his behaviour. He was restless, refused food and water, and his eyes had a startled look.

The next day he was much the same, but showed difficulty in movement of the hindquarters. The third day he was apparently somewhat better and took some food and water. The stiffness in movement of the hindquarters still existed.

On the following day he was paralysed in the hindquarters and was shot. I saw this horse only on the first day of his illness, when I did not see any symptoms which I considered sufficiently typical to diagnose rabies. The owner, Mr. G. N. G. Walles, G.B.V.C., however, considered the horse rabid and shot it. At no time did the horse show violent symptoms. The brain was not examined.

The second horse, an Arab racing gelding (No. 2) was being used as a hack by a lady. On September 4th he was ridden by the lady in the morning. He seemed excitable and inclined to shy. The lady informed Mr. Walles, who saw the horse and found him slightly excitable. He had the horse secured and kept under observation. During the day the horse became more excitable and in the night very violent. I was called to see him on the next morning, when he presented the following symptoms :—

He would stand quietly in the box, looking out over the bars with his ears pricked, eyes widely opened and glancing quickly from side to side ; then he would move uneasily about and periodically seize the bars in front of the box with his teeth and shake them viciously.

XUM

When approached he would fall to the ground, going down in a heap with his legs appearing to crumple up under him. When down, he rolled and kicked violently for a short time, and then got up and stood quietly.

In a short time the above cycle was repeated. He had been behaving in this manner most of the night, and the stable walls and bars bore evidence of it. There was no marked salivation.

I considered it a typical case of rabies and shot the horse. The brain was examined microscopically by the Director of the Pasteur Institute, who reported it positive. An emulsion of the brain substance was injected into the Sub-Arachnoid Space of a rabbit. The rabbit died in 20 days, showing typical symptoms of rabies caused by injection of street virus in the rabbit.

On the 14th night an Arab racing stallion (No. 3) in the same stable appeared to be suffering from colic and was given a colic drench. Mr. Sturgess, M.R.C.V.S., saw him next morning and found him constipated, off feed and fevered. He was quiet, but had frequent erections of the penis. As the habit of masturbation is common in Arab stallions, no great importance was attached to this symptom at the time. Next morning there was no change, but the pony took a little food and water. On the 17th the owner reported that the horse was mad, and Mr. Sturgess and I saw him.

He was in a state of great excitement, moving violently about the box, ears pricked and rapidly twitching. There were frequent erections of the penis. The syce said the pony had been biting his legs. When anyone approached the box he sprang forward and acted as though he would mount a mare. He was shot and the brain on examination gave a positive result.

On the same morning (September 17th) another horse (No. 4), in the same stable, showed suspicious symptoms. This was an Australian carriage gelding. He was excitable and refused food. There was continual twitching of the ears and occasionally spasmodic twitching of the neck and jaw muscles. His eyes were widely opened and glancing rapidly in different directions. He was moving restlessly about in the box. This was diagnosed as an early case of rabies, and the horse was shot. Unfortunately the brain was much damaged by the bullet, and the small portion sent to the Institute proved unsuitable for examination, so a definite diagnosis could not be made. Mr. Sturgess and I both agreed that it was a case of rabies.

The horses Nos. 3 and 4 which were shot on the 17th, had been examined after the visit of the mad dog, but no wounds were discovered. These were not inoculated with the anti-rabic-vaccine.

Of the three horses which were known to have been bitten, and which were inoculated, two died of rabies and one is still alive and well at the date of writing (19/11/26). The period of incubation in these cases was short (28, 35, 45 and 48 days respectively). The inoculated horses had a shorter period of incubation than the uninoculated. The uninoculated horses must have received trivial wounds, as these escaped detection, while in the inoculated horses the wounds were large and obvious. This may be the explanation of the differences in the periods of incubation.

This method of inoculation has been used with success for some years past in Ceylon on a very large number of cases of human beings bitten by rabid dogs, and also with success in a small number of cases in dogs bitten by proved rabid dogs. Perhaps the cause of failure lies in the use of a 5 per cent. emulsion of brain and spinal cord without at the same time increasing the percentage of carbolic acid. That the vaccine did not actually infect the horses is shown by the result of inoculation of brain from No. 2 into a rabbit. Had horse No. 2 died as the result of rabies set up by the vaccine, the virus present in

No.	Date Bitten by Rabid Dog.	Whether Vaccinated or not.	Dates Developed Symptoms.	Period of Incubation.
1	30–7–26	Vaccinated	27–8–26	28 days
2	30–7–26	Vaccinated	4–9–26	35 days
3	30–7–26	Not Vaccinated	14–9–26	45 days
4	30–7–26	Not Vaccinated	17–9–26	48 days
5	30–7–26	Vaccinated	Still alive and well on 19–11–26	—
Cow ..	30–7–26	Not Vaccinated	Still alive and well on 19–11–26	—
Dog ..	30–7–26	Destroyed same day	—	—

his brain would have been of the fixed type, and would have killed a rabbit in seven days instead of in 20 days.

Very few cases are recorded in the literature of the use of anti-rabic-vaccine in horses. Huytra and Marek (1) record an instance in which Kurz and Aujesky inoculated 44 colts on a farm where three animals had died of rabies, six of these colts had wounds from bites on their bodies. The method used was that of Hogyes. The horses were injected with emulsions of varying dilution of virulent spinal cord in normal saline. The vaccination had no ill effects on the colts and none of them subsequently developed rabies.

It is of interest to note that symptoms of sexual excitement were present in only one of these four cases.

The horse showing these symptoms was a stallion while the other three were geldings.

REFERENCE.

1. Huytra and Marek Pathology and Therapeutics of Diseases of Domestic Animals (2nd Authorised American Edition), Vol. I, page 516.

A CASE OF ABDOMINAL PREGNANCY IN A COW.

By H. A. BARRETT, M.R.C.V.S.,
Nuneaton.

On Sunday, January 23rd, a farmer client 'phoned saying that one of his cows had "put her body out," asking if I would attend at once. On my arrival I found that the cow had been dead a few minutes.

Upon examination I found the whole of the uterus on the floor and very much swollen. On asking when she calved the owner, to my surprise, said "She has not calved." On examining the uterus I found there was no rupture, but on pressing on the cow's flank I could plainly feel the calf in the abdomen, so concluded that it must have been abdominal pregnancy.

I wanted to open the abdominal flank to see how the calf was developed, but the owner did not want the carcase cut until at the knackers'. The knacker writes saying that he found a fully developed calf loose in the abdomen.

THE VALUE OF TRACHEOTOMY AND ITS RISK IN CATTLE PRACTICE.

By OSCAR STINSON, M.R.C.V.S.,
Appleby, Westmorland.

Tracheotomy should be performed only when all other treatment has failed, as the trachea of the bovine is peculiar in that after the operation (either temporary without the aid of a tube, or permanent with the aid of a tube) it may partially collapse, causing noisy breathing and sometimes suffocation of such a nature that it is impossible to

relieve the condition by a lower operation, because in the case of a fattening bullock it would hardly be putting on flesh before the same thing might happen again; and in the younger animal the second operation would be useless, as the trachea in cattle is not developed naturally once a tube has been inserted; in other words, if the trachea in the young bovine is injured its lumen may get less from that time, and the difficulty in breathing would not allow it to flourish and so enable the animal to answer any useful purpose, either for fattening or milk production.

The only conditions, therefore, justifying tracheotomy are those which endanger the life of the animal, such as growths in the air passage, in the region of the nose, pharynx and the upper portion of the trachea, usually in the form of inoperable growths as well as inoperable growths from without pressing on these organs, to allow the animal to be fattened if at the fattening age, in the growing calf or yearling this is impossible, for it only facilitates fattening in the best subject.

Other justifiable reasons for the operation are lancing abscesses in the throat and for relieving pharyngeal choking, on which a great deal of time has been unsuccessfully spent.

The other uses of tracheotomy are for rendering the animal less able to strain, e.g., a case of eversion of uterus which has to be treated while the cow is standing, but this should not be attempted if a beam and pulley are anywhere in the vicinity and the animal can be trusted to walk to the beam, when four ounces of chloral hydrate should be given and a quantity (three to four pints) of cold water or other suitable vehicle. It might be mentioned here that a cow goes down in half an hour after the administration of that amount of chloral hydrate and strains very slightly, especially if the hindquarters are pulled up with the aid of pulley, etc., and beam, the root of the tail being shoulder high. She will get up in seven or eight hours. In the meantime she will not be straining and will be none the worse for the experience; indeed, wonderfully fresh so long as she has been kept warm. In some cases she will have diarrhœa the next day. This is never serious and has its advantages, probably. It should be noted that if a single calf be fed on the milk of a cow after having that dose it will sleep away and die from chloral hydrate poisoning; therefore, it is important to instruct that the milk should be put down the drain for a day or so.

Reverting to the matter of tracheotomy and its indications, there is one other indication for its use, and that is in a very bad case of acute vaginitis, when it would be unsafe to continue giving a sufficient dose of chloral hydrate for a prolonged period to allay severe straining.

Tracheotomy in these cases, with very careful treatment of the vagina, may bring about many recoveries that otherwise would be impossible. In some of these cases the advantage of the operation would be entirely done away with if even a hand were inserted into the vagina. This has been known to set up straining to such an extent that the shock from it caused death. In these cases of straining there is no need for a tube, as on forcible expiration or at any attempt of straining, the operation wound opens when necessary, if a straight incision is made through the skin between the muscles and through two rings of the trachea. It might be worthy of notice here that in the operation for injection for husk in calves, the best results are obtained by the author if an incision is made longitudinally through the skin right down on to the trachea, so that the space behind the rings can be felt by the finger, and a hypodermic needle inserted, as otherwise by indiscriminately inserting a needle into the calf's trachea the same untoward sequel can happen to the trachea as in the case of tracheotomy. In a nutshell, in operating on the trachea in bovines it is necessary to be quite sure that no other means would be as useful and that on account of the peculiarity of the bovine trachea of partially collapsing, this must be taken into consideration, particularly in pedigree stock. The operation of tracheotomy in such animals, in many cases would at least make it an unsound animal. When straining is to be fought, in calving cases and in cases of eversion of the uterus, when the standing position is unnecessary, nothing better can be wanted than a four-ounce dose of chloral hydrate.

Tracheotomy does not completely stop severe straining; a cow can calve without any assistance in spite of the presence of the tube, and if there is any irritation indicating the possibility of eversion of the uterus, she can just as well accomplish that.

HOOSE IN CATTLE AND LAMBS.

By R. HUDSON, F.R.C.V.S.,
Retford.

It is many years since hoose has been so prevalent or so severe as it has been this summer in my district.

The summer had only just begun when we were called upon to treat cases. Lambs and cattle of all ages have been and are being treated up to the present time, October 15th.

The disease has prevailed on all pastures, upland and lowland, sand and clay, feeding pasture and aftermath, the latter being productive of most cases.

Good or bad pasture appears to make little difference to the

prevalence of the disease nor does top dressing with slag and other tillage.

In many outbreaks severe cases of bronchitis and broncho-pneumonia have occurred and resulted in many deaths. In these cases dyspnœa is the chief symptom due to the bronchi being blocked with frothy exudate, worms and sometimes blood clot. The temperature may be normal or only elevated one or two degrees, the animals gasp for breath, froth at the mouth, breathe with a painful grunt, cough dry and painfully. The lungs become enlarged, the air cells broken down, the air often reaching the under surface of the visceral pleura in many places. In one case, a three-year-old heifer, I noticed emphysema under the skin about the shoulder.

Lesions: perhaps all cases are better taken off pasture and fed on other foods than grass. If given hay and meals they should be damped to lay the dust and so prevent it irritating the air passages.

Small and shallow drinking places may be a source of infection and should be avoided if possible.

Lambs should be removed to fresh pastures, mustard, clean stubbles, rape, kale, turnips or lanes, anywhere in fact where they can obtain clean (non-infected) diet and nutrition helped by trough feeding.

In many flocks of lambs the disease has been complicated by the presence of dysentery due to worms, *Hæmonchus contortus* in the stomach and *Trichurus ovis* in the intestines, and by a secondary pneumonia probably from intestinal bacteria. Many owners have been dosing their lambs with arsenical preparations, and *post-mortem* examinations have revealed most intense inflammation of the stomach and intestines, perhaps set up by them.

In hoose unattended with complications intratracheal injection has proved the most satisfactory treatment in both cattle and lambs.

Steel's injection has been used, viz.:—

R	Ol. Tereb.	℥xv–xxx
	Ac Carbolici	℥v–x
	Chloroform	℥viii–xv
	Ol. Rapii or Ol. Olivæ ..	ʒi–ʒjf

and is preferred because it is less irritant and safer for lambs.

With two catchers and one holder in a properly arranged pen, 120 to 130 lambs can be injected per hour; so a large flock can be easily dealt with after a little practice.

In all flocks it is best to divide them into three lots, the strong, medium and weakly ones and to feed, protect and dose them accordingly.

An ordinary 5 cc. syringe is best for lambs, using the thicker needle usually supplied by the makers.

Instead of injecting half way down the trachea the best position is through the crico-tracheal ligament. Sometimes, owing to a few drops of the injection entering below the skin, swelling may take place and make a second injection difficult; injection can then be made lower down the trachea.

Bronchitis and broncho-pneumonia cases in calves should be placed in well ventilated places, hot fomentations applied to the chest wall and medicaments comprising Terebene or Ol. Tereb, Tr. Camphor, Tr. Camph Co. or Chlorodyne administered.

All food should be scalded and made easy of digestion.

Intertracheal injection of irritants in these cases should be avoided. For some years now I have used a catching rope provided with a quick release attachment at the end. It is made in the form of the figure eight. Into one hole the rope is spliced, the other is jointed in the middle and held when locked on the rope by a washer packed up by a spring.

As it often takes longer to release an animal than to catch it, the device is a great time-saver. The rope also carries a knot to prevent the noose closing too tightly round the animal's neck.

The needle usually supplied by the makers for injecting calves is not very satisfactory as it often requires a hole made with a scalpel before it will penetrate the skin.

The needle I like best is 13 gauge thick, the point is ground flat and rubbed sharp on a good oilstone. It is unplated. Erosion soon takes place under the plating at the point and makes it difficult to keep sharp.

PECULIAR INTERMITTENT SCREECHING FITS IN DOGS.

By T. W. HUGHES, M.R.C.V.S.,
Mold.

About two years ago we were consulted by a lady owning a large kennel of West Highland terriers. The kennel contains about 80 dogs. The lady keeps between 10-20 of her particular pets in the house, and these are only in the kennel when the family are away from home. These house dogs started screaming fits two years ago, and we were at a loss to know the cause. They were treated for parasites, etc., with no beneficial result. In about two months they cleared away. In the early summer of this year the whole kennel became affected, irrespective of age, and the fits occurred at pretty regular intervals in all the dogs, but they seemed to vary in intensity, some of them lasting for as long as five minutes; others so slight as to be hardly

noticeable. In some cases the dog appears nervous and looks about as if frightened; and in others, for no apparent reason, the attack would suddenly terminate into a fit. In a great many cases, if one speaks to the dog in the beginning, the attack will stop. It should be noted that in the majority of cases these fits occurred during exercise, one starting and a great many following suit. Bitches seem more susceptible than dogs. During some of these fits, the pupils are widely dilated, and the dog bites and struggles violently, and seems quite demented, while in others one only notices howling. As time goes on the severity of the fits gets less and less, and the kennel may be free from fits for two or three weeks and then they reappear. Recently we have quite a number of similar cases in other kennels, and in the local dog shows, dogs suddenly start these strange fits. The treatment we have adopted is rest, darkened room, milk diet in some cases, while in others we have increased the meat with similar results, and the bowels rectified with medicinal paraffin. The dogs affected always had a good appetite and the general health was not affected. In most of the dogs the fits have disappeared, while in some they are persistent. Although we have made observations regarding two foxhound kennels, we have not yet heard of a foxhound being affected. The smaller breeds in our experience are the more susceptible. The dogs have since been treated with Luminal Soda with fairly good results, except in one dog, which still exhibits severe fits at intervals of about 10 days. The Luminal Soda in this case possibly has not been administered for a sufficiently long period continuously.

EPIZOOTIC HYSTERIA OF THE DOG.

By FREDERICK HOBDAY, C.M.G., F.R.C.V.S., F.R.S.E.,
London.

During the past two years, on several occasions I have been called in consultation by my colleagues over a peculiar form of hysteria in the dog which has of late assumed sufficient proportions in its spread about different parts of England to justify its being considered Epizootic.

That it is not a form of so-called "distemper" is shown by the fact that a number of the dogs attacked can be authoritatively stated to have already passed through this disease; not merely on the word of the owner, but corroborated by the veterinary surgeon in attendance.

The following extracts from two letters received a few days ago from two separate owners of sporting and show dogs illustrate very characteristically the way in which the symptoms make their appearance.

Speaking of a Cocker Spaniel, four years of age, which has had no illness except very bad distemper as a puppy, one owner writes, " I speak of the attacks as ' fits,' but really they present none of the usual features which one associates with fits. There are no convulsions, and there is no foaming at the mouth ; but the dog starts screaming at the top of its voice and if not held, runs away in a straight line. If one of us is with him the attack only lasts quite a short time, but if, as happened yesterday, in spite of all our vigilance, he escapes, he keeps on screaming until one of us gets him and calms him. It seems almost like hysteria or sheer panic. He is absolutely fit in himself ; his bowels are perfectly healthy and he has a big appetite ; in fact, he appears perfectly normal except that he has rather a ' weird ' look and occasionally has shivery nervous attacks. The ' fits ' started about a month ago and occur at intervals of two days to a week. His only abnormality is that he passes a tremendous amount of water and wants to be let out more frequently than the other dogs. He is in beautiful condition and unless one saw him in one of his attacks, one would notice nothing unusual about him."

The second owner writes in regard to an Alsatian puppy, aged 18 months : " He seems to be suffering from some nervous complaint. He was perfectly well up to three or four days ago, when he was seized whilst out for a walk with a kind of nervous fit. He suddenly threw up his head and howled loudly and incessantly as though in violent pain, and then started rushing about in a wild manner, foaming at the mouth and apparently unconscious of his surroundings. He was caught and made to sit down and in about five minutes became perfectly normal. He had two such attacks during the walk of about one and a half hours and one later in the evening after he had been let out and was being shut up for the night. This afternoon whilst walking out with the other dogs, he had another attack which lasted for about ten minutes, and then he became perfectly normal. He never loses consciousness during the attacks, neither did he fall over as I have seen other dogs do when having fits. Immediately the attack is over he is perfectly normal, has a good appetite, and high spirits. He is a fine, handsome dog with a gentle disposition though very nervous, and with the exception of a slight turn of canker in the ear some months ago, has never had any illness. He has always lived in the country and has never had distemper."

When considering the history of an isolated case one might be tempted not to think seriously of the symptoms which are given, but the constant recurrence of letters, describing these symptoms, from veterinary surgeons and owners in various parts of Great Britain, has shown that the trouble is becoming widespread.

XUM

In one or two instances the disease has ceased when the biscuit food has been either changed or entirely removed, and substituted by an almost entire meat or fish dietary. In one outbreak a microscopical examination of the biscuit revealed the presence of mould, and the whole consignment was destroyed, the trouble stopping immediately.

One owner, in describing the behaviour of two of his shooting dogs when out at work in the field, said " they appeared as if they had seen spooks."

Very few deaths have occurred, although in some instances there have been injuries owing to the dog striking violently against objects when rushing frantically about.

The treatment which has given most satisfactory results has been to change the dietary, to administer triple bromide (or some such sedative) and to keep the patient as quiet as possible for a matter of two or three weeks.

THE VALUE OF THE BRONCHOSCOPE IN CASES OF OBSTRUCTION OF THE ŒSOPHAGUS.

By HERBERT BUCKINGHAM, M.R.C.V.S.,
Norwich.

DECEMBER 24th, 1925.—The patient was a smooth-coated fox terrier dog six months old, said to have vomited and to have shown signs of choking for two days. The animal was unable to feed and had frequently fits of yelling, especially upon being touched. I found him very snappy if only touched very lightly anywhere on the body, even with a thin probe he began to yell loudly. He could walk and did so, going to the door and depositing a quantity of fœtid fæces containing a quantity of mucus.

He would not let me open his jaws with my hands, clenching them so tightly that it was impossible to do so, yet when he was yelling he would open them widely. He could still swallow liquids. I put him under chloroform and passed the probang until I came to an obstruction. When I withdrew it there was some blood upon it. I left him that night on the off chance of the obstruction becoming softer.

December 25th, 1925.—Again chloroformed him and passed the probang. It came out again with blood on the horse-hair portion. I could not move the obstruction and left him until the next day.

December 26th, 1925.—Having a friend in the human branch of medicine, a surgeon who takes great interest in comparative work, I left a message *re* the case at his house, and at 4 p.m. I again chloroformed the dog whilst the surgeon passed a human bronchoscope tube down the œsophagus. This, although about a foot long

and nearly an inch in diameter, went down without much difficulty and we could plainly see the rupture but not the obstruction, as this had, unfortunately, passed through into the thoracic cavity. After discovering the rupture we decided that the case was hopeless and, as I had a free hand, I painlessly put the dog away.

The *post-mortem* examination revealed a large bone and a perforation of the œsophagus in its thoracic portion.

I was struck with the value of the bronchoscope for such cases and the ease with which so large a tube could be inserted in the œsophagus of so small a dog, together with the clear and exact view it gave of the lesion. The size of the bone, too, the cause of all the trouble and the extreme elasticity of the œsophagus which enabled the dog to swallow it.

I do not think the probang was the cause of the rupture and the surgeon was of the same opinion. The hæmorrhage was there before I exerted pressure.

ŒSOPHAGOTOMY IN A DOG.

By JAMES A. R. ROBERTSON, M.R.C.V.S.,
Stourbridge.

Subject.—A smooth fox terrier.

History.—The dog was brought to me because it had a large swelling in the throat. The owner told me that two days previously the dog had swallowed a bone. The swelling was noticed soon afterwards, but the owner did not get at all alarmed and thought that it would go away naturally. However, it did not disappear, and for two days the dog did not attempt to swallow anything—not even water.

The swelling was situated about the junction of the middle and lower thirds of the neck and appeared quite uniform—not confined to one side at all. On attempting to pass the probang I felt an obstruction which seemed firmly lodged, so I decided to operate.

Operation.—I shaved the area over the swelling and administered morphine sulphate three-quarters of a grain. After about half an hour I gave an anæsthetic, using chloroform two parts, with ether three parts, and a remarkably small quantity of this was necessary to produce complete anæsthesia. I then painted the area with iodine and carefully cut down on to the obstruction about an inch to the side of the middle line. The œsophagus was ruptured by a sharp piece of the bone, so I enlarged this opening and removed the bone with difficulty, as it had four sharp points, each of which was embedded in the wall of the œsophagus. The œsophageal wall seemed to be very thin and would have easily torn, but I managed to get some catgut sutures inserted

The skin wound was closed with silk worm gut leaving a small opening for drainage.

During the following two days I gave small quantities of liquid at short intervals—brandy and milk, bovril, whipped egg, etc., but the stitches then broke away. I tried to stitch the œsophagus again, but failed as the wall broke down when the needle was inserted, so I decided to risk letting it heal without stitches. I inserted a plug of gauze wrung out of acriflavine solution (1 in 1,000) and bandaged the neck to keep it in position, covering the bandage with a many-tailed body and neck bandage and inserting a pad of cotton wool under the latter to keep a little pressure on the gauze.

I changed the dressings at first twice a day and then once a day, and cleansed the wound each time with hydrogen peroxide.

The œsophageal wound took 12 days to heal and during this time the dog had nothing but liquids. After 15 days I gave some semi-solids and about the 18th day after operating I let the dog go home, giving instructions to keep on very soft food for a time. The bone was a large piece of a sheep's lumbar vertebra.

The dog has now been at home about 10 weeks and when I last heard about him was doing well.

A USEFUL METHOD OF DESTROYING LIFE IN THE DOG.

By C. WENTWORTH ELAM, M.R.C.V.S., D.V.H.,
Liverpool.

Owing to its powerful and rapid action, Scheele's hydrocyanic acid is often used by practitioners as an agent for destroying life in dogs. It has one great disadvantage when used for this purpose, i.e., its administration is almost invariably associated with a piercing howl or yelping cries. If we note carefully the symptoms which follow its administration we can only come to one conclusion, i.e., that death is not painless. It is possible, however, to eliminate these yelping cries and make the end peaceful by combining morphine with the acid. The presence of morphine does not in any way interfere with the toxicity of the acid, and death is just as rapid.

The procedure I adopt is to dissolve 2 grains of morphine sulphate in 3 or 4 cc. of Scheele's hydrocyanic acid, and inject this mixture by means of a fine hypodermic needle into the right side of the thorax, the needle passing between two of the ribs. This dose I find quite satisfactory for dogs of the terrier size, and though at times, merely a trace of morphine will bring about the desired result, it is always advisable to give a minimum dose of 2 grains.

UNUSUAL CASE OF CARCINOMA IN A CAT.

By LOUIS SEWELL, M.R.C.V.S.,
55, *Elizabeth Street, London, S.W.*1.

THE subject was a five-year-old cat, brought to me in a very emaciated condition, and on examining it I found a decided growth in the abdomen which I thought was either tubercular or cancer, and recommended the cat being destroyed, which I did forthwith.

On making an examination I found that the bowels, bladder, kidneys, spleen, and peritoneum had thousands of nodules on the external surface about the size of match-heads. As I had never seen the condition before I sent the viscera to Dr. Crew and his report is as follows :—

" The final verdict is *carcinoma*, i.e., epithelial.

" The condition is neoplastic rather than granulomatous, and epithelial rather than endothelial. If the primary growth seemed to be peritoneum, then the question of an endothelial origin would need to be reconsidered, but personally, I do not think the origin was peritoneal, but in some organ—which I do not know, since all were more or less equally affected."

THE LOUSE OF THE MOUSE.

By A. W. NOEL PILLERS, F.R.C.V.S., D.V.S.M.,
Liverpool.

UNDER the title of " Phthiriasis of the Mouse, *Hæmatopinus muris*, with observations on treatment by salicylidene compounds," Dr. Arthur Compton, M.D., D.Sc., described on page 255 of THE VETERINARY JOURNAL for May, 1926 (Vol. 82), what he believed to be a new louse of the mouse. He stated, " The author is not aware of any description of the louse of the mouse. No mention, for instance, is made of this parasite in the exhaustive treatise on the parasites and parasitic diseases of the domesticated animals by Neumann and Macqueen."

I am not concerned here with the clinical portion of the paper, although perhaps some of it is unsupported by evidence, but I pointed out to Dr. Compton by letter on June 1st, 1926, that it would be advisable for him to consult other literature with regard to the louse itself. As Dr. Compton has made no further contribution to this subject it seems only right to state that according to G. F. Ferris' " Contribution towards a Monograph of the Sucking Lice " there are two species of sucking lice found on European mice (*Mus*). These were described by Burnmeister so long ago as 1839 and are now known by the names of *Hoplopleura acanthopus* and *Polyplax serrata*. The latter has been found on house and tame mice in England. I have examined numerous specimens from experimental mice, and compared them with individuals determined as *P. serrata* by Dr. J. Waterston

of the British Museum (Natural History), and in each case they have belonged to this species.

This louse has the antennæ composed of five articles. They are sexually dimorphic, the third segment in the male having the distal and anterior angle prolonged. The female measures about 1.1 mm. and the male .6 mm. in length. It does not appear possible to state to which species Dr. Compton's louse belongs, because among other things he says, "it carries two antennæ which are implanted on lateral protuberances. The third and fourth articles of the antennæ are alike." As he does not mention the number of articles in the antennæ it is possible that his "lateral protuberances" represent the first article, so that his "third and fourth articles" may thus become the real fourth and fifth. If this is so the actual third article of the male antennæ of his specimens may possess the character described above. The lengths given by him are 1.5 mm. for the female and 1.1 mm. for the male, which are much longer than in the case of *P. serrata*, but agree closely with those given by Ferris for *H. acanthopus*, viz., female 1.2 to 1.4 mm. and male .9 to 1.1 mm. The essential points are not at all clear in Dr. Compton's two illustrations. They, however, look somewhat like male and female *P. serrata* and unlike a species of *Hæmatopinus*.

"TIPS ON CAMELS."

(Not By CAPT. A. S. LEESE!!!)

The following is an abstract from an amateur essay on watering camels :—

"When a camel has been watered it is not nesserary for it to be watered for two or more days as they hold suffishant to last which the hump acts as a resivoir."

STUDIES IN RINDERPEST IMMUNITY: (3)* SIMPLIFIED TECHNIQUE FOR THE MANUFACTURE OF ANTI-RINDERPEST SERUM.

By H. E. HORNBY, F.R.C.V.S.,
Mpwapwa, Tanganyika Territory.

Even in a scientific laboratory it is difficult to preserve perfect impartiality of judgment concerning the value or even action of

* Previous articles of this series appeared in the November (1925) and the July (1926) numbers of the Veterinary Journal.

products and processes which have cost the observer much thought, time and trouble. Too often one is tempted to deceive oneself and explain away the undesirable results which to an adverse critic would suffice to invalidate the conclusions deducted from the " successful " experiments alone, from those experiments, that is, which give the desired results. How else can one explain the discordant conclusions arrived at not only in different laboratories, but by different workers in the same laboratory concerning the relative values of various normal, immune and " hyperimmune " sera ? Fortunately for us who manufacture large quantities of anti-rinderpest serum, there is overwhelming evidence in favour of the view that this specific serum is of great value in checking mortality from the disease, by its action in assisting affected animals to recover and suppression of outbreaks by rendering in-contacts less susceptible to infection. It is true that at a recent Government Veterinary Conference at Penang Mr. H. G. Simpson, F.R.C.V.S., expressed disappointment with the results obtained from the use of Muktesar serum in Malaya, but as this serum has given incontestibly good results in the country of its manufacture, its failure to give equally good results abroad merely emphasises the true, narrow specificity of anti-rinderpest serum, and the necessity for each country to obtain a serum suited to the needs of its own animals.

Serum manufactured in the way about to be described has satisfied its users in this Territory, its titre appears to be equal to that of any similar serum made in other countries, the mode of manufacture is humane, and the cost of production low. No suggestion, however, is made that the procedure adopted here should supersede older or alternative methods elsewhere ; the reason for publication is that one of the contemplated articles of this series has for its title, " The Mode of Action of Anti-Rinderpest Serum," and it is essential that the method of manufacture of the serum should be first explained.

Until recently, and ever since " hyperimmunisation " for anti-rinderpest serum production has been practised on a large scale, it has been accepted as almost axiomatic that although the serum of an immune beast contains antibodies, yet a much more potent serum is obtained from a " hyperimmune " beast ; and so, during the past 25 years, almost all the anti-rinderpest serum which has been produced commercially has been " hyperimmune." Unfortunately, existing methods of testing anti-rinderpest serum are not exact enough for delicate comparison of titre ; they are only sufficiently accurate for an opinion to be formed as to whether the serum is good or bad.

Using the crude test of double inoculation, which is the only one at our disposal, we found that serum from oxen which were merely immune could be classed as good, and at one time we even went the length of issuing such serum to inoculators in the field. It may have been coincidence, but a consignment of this immune serum was the only one about which complaints were received; but in view of these complaints, and because we did not see our way to standardise such a product, we reverted to the practice of so-called hyperimmunisation. The usual way by which "hyperimmunisation" is effected is by the injection of a single large dose, or a series of large doses, of citrated virulent blood; the routes being subcutaneous, intraperitoneal or intramuscular. Direct intravenous transfusion is not practicable owing to mortality from anaphylactoid stock, nor is the painless and safe transfusion of fresh blood into the peritoneal cavity more serviceable, as the only way of measuring the amount of blood which passes between the two animals is a very complicated electrical one, and also the peritoneal pressure stops the flow long before the donor is bled white. In practice one generally gives the desired amount by gravitation or syringe. Now the injection of large amounts of blood either under the skin, into the muscles or into the peritoneal cavity is a painful affair for the recipient, whereas when the same amount is injected into the rumen the animal experiences only the trifling pain inflicted by stabbing the flank with a sharp trocar; the beast may actually feel better for its feed of blood. The novelty of our procedure is that we "hyperimmunise" by means of *intrarumenal* injections. The great advantage of this method of injection is that one can use as antigen virulent material which it would not be safe to introduce parenterally.

It is well known that the virus of rinderpest is not confined to extractable blood, but can be found in all parts of the body and especially in the abdominal viscera. By means of the Minimal Infective Dose method we ascertained that if to a mince of liver, spleen, heart, kidneys, abomasum, colon and cæcum, taken from the virus giver after he had been bled to death, was added an equal weight of water, then an hour later the juice which was obtained by straining through muslin had a M.I.D. only slightly higher than blood from the same beast, so that 2,500 c.c. of this virulent fluid had a virus content equal to about 2,000 c.c. of blood from the same animal. From a virus producer of the size generally used here we can obtain about 10 litres of blood and eight litres of virulent fluid, so that, using 2,000 c.c. of V.B. or 2,500 c.c. V.F. per beast, we are able to "hyper-

immunise" eight serum-makers instead of the five which could be treated with blood alone.

At one time we thought that another advantage of this method of injection was that thereby the risk of transferring trypanosomiasis from the virus-giver to the serum-maker would be eliminated, but experience has shown that this advantage does not exist.

In the last article of this series I produced evidence to show that infection rarely takes place via the mouth, and that large quantities of virulent blood could be put into the rumen without starting infection in a susceptible animal. At the same time it was pointed out that if the virus survived the passage through the first three stomachs, then it would probably act as an infecting agent. It might seem probable that if virus put into the rumen failed to infect a susceptible beast, then virus put into the rumen of an immune animal would likewise fail to provoke any tissue response with antibody formation. The reply, however, to this would be that we know nothing of the site of antibody formation, and that if this be the liver, then a smaller quantity of antigen—and not necessarily living antigen—carried to that organ by the portal vein might stimulate the production of more antibodies than a larger quantity of antigen arriving by the hepatic artery. Fortunately there is a way of testing response to antigen stimulation, and the intrarumenal method satisfied this test; to describe which necessitates a digression.

Serum proteins are divided into fractions which may be classified as albumin and globulin. The globulin can be further subdivided into euglobulin and pseudoglobulin, based on the distinction that the latter is soluble in water and requires a higher concentration of salt for its precipitation. Thus, euglobulin is precipitated by a saturated solution of sodium chloride in which albumin and pseudo-globulin remain dissolved. Numerous investigators have found that there is usually an increase in the globulin fraction of the blood when a bacterial antigen is injected, *i.e.*, that the globulins act as carriers of antibodies, although the extent of the globulin increase is not a measure of the degree of immunisation. HARTLEY, in an important article on the immune bodies occurring in anti-rinderpest serum (*Memoirs of the Dept. of Agric. in India, Vety. Ser.*, 1914, Vol. I, No. 4) showed convincingly that the antibodies of rinderpest are combined with the euglobulin or, as he prefers to call it, the protein fraction which is insoluble in a saturated solution of common salt.

Reviews

Diseases of Animals in Relation to Man. By THOMAS W. M. CAMERON, M.A., B.Sc., Ph.D., M.R.C.V.S., The London School of Hygiene and Tropical Medicine. London: Faber & Gwyer, Ltd. Pp. 222. 3/6 net.

It is paradoxical but nevertheless true that in this age of specialisation, the advantage of a little knowledge of all matters, and especially of those bearing on his well-being, has become very apparent to every intelligent person. Pope spoke broadly when he said, " A little learning is a dangerous thing." A little learning in a wise head sometimes obviates a great deal of trouble.

" Diseases of Animals in Relation to Man " is one of a series published as " The Modern Health Books " which aims at bringing within the reach of everyone the latest expert opinions on the chief problems of health. Dr. Cameron's contribution to the series is the layman's text-book of comparative medicine.

It was a happy thought which inspired the introductory chapter with its simple and complete explanation of technical terms used in the body of the volume.

Chapters II to VII are concerned with the important contagious animal diseases and a mass of explicit information has been put into the hundred or so pages involved.

The more important animal parasites and fungi are dealt with, and the chapter on milk is profitable reading for the dairy farmer who appreciates the necessity of putting a better product on the market. In this connection the author states that his recommendations " may seem somewhat Utopian, but there is nothing impracticable about them "; a true statement, but we trust the harassed farmer will read such comments as " Flies and rats should be prevented from entering the building " (milking shed) in the spirit in which they were obviously written !

Short chapters on the diseases of birds in relation to human health, and on meat and meat poisoning are included.

Never before has there been a book precisely similar in scope to this one, and the veterinary practitioner should find in it a searchlight focussed on his work and place in modern medicine. It is an incentive for the public to " render unto Cæsar the things that are Cæsar's." C.

The Meat Industry. A Text-book for Meat Traders and Others engaged in the various branches of the Meat Industry. By H. B. CRONSHAW, B.A., Ph.D., A.I.C., Principal of the Brierley Hill Institute, and D. J. ANTHONY, M.R.C.V.S., D.V.S.M., Veterinary Meat Inspector and Pathologist, Messrs. Marsh & Baxter, Ltd. London: Bailliére, Tindall & Cox, 1927. Pp. xii, 157. Price 6s. net.

With a view to providing a text-book for the use of students studying for the Meat Traders' Diploma of the National Federation of Meat Traders'

Associations, Dr. Cronshaw and Mr. Anthony have produced this admirable work. Although the book treats only of the elementary stages of the subject, it should prove useful to veterinary surgeons who are studying for, or engaged in, the work of meat inspection.

It would be invidious to single out one of the joint authors for special mention, but we nevertheless cannot help but express our great satisfaction at finding a member of our profession joint author in a work of this kind. This is not the first time that we have had evidence of Mr. Anthony's progressive spirit in helping to prepare a new road which will eventually lead the profession into a very desirable quarter of the important realm of meat industry.

The chapters on Anatomy and Pathology may not introduce anything new to the veterinary surgeon, but the section dealing with the economics of the trade will be found interesting and instructive.

The Common Colics of the Horse : Their Causes, Symptoms, Diagnosis and Treatment. By H. CAULTON REEKS, F.R.C.V.S. Fourth Edition. London : Baillière, Tindall & Cox. Pp. xviii, 403. Price 10/6 net.

In writing the fourth edition of his work, Mr. Caulton Reeks gives us a paraphrased assurance (the value of which rests on its having come from him) that " much water has yet to pass under the bridge " before the horse can lose his time-honoured place in agriculture and in other pursuits for which he is pre-eminently fitted. If or when that day should come, it will be a much used, dogeared, and bethumbed copy of Mr. Reeks' work that is put aside amongst the treasures of the past to be displayed as evidence of " how things used to be done " ; but the fact that after 24 years another edition of this book is called for, reduces to absurdity any effort to bring its merits before a profession which thinks of Reeks when it thinks of colic of the horse.

This edition contains many new features, including the technique of the stomach-tube, and a fuller and more certain description of obstruction of the small intestines. The part played by bacteria in the causation of colic is more fully considered, and the important matter of auto-intoxication is explained and discussed ; also the treatment of cæcal impaction is more exactly described.

It is pleasing to read a work which is so modestly put before us, and in a world of unconscious plagiarism, to find plagiarism confessed. C.

New Cancer Facts. By DAVID MASTERS. With an Introduction by SIR JAMES CANTLIE, K.B.E., F.R.C.S., etc. London : Bodley Head, Ltd. Pp. xiii, 83 and illustrations. Price 2/6 net.

THIS is a book primarily for the layman, but the busy veterinarian who conscientiously feels it his duty to keep abreast with the advances of medical knowledge will find here an excellent survey of the latest investigations into the problem of cancer.

The new facts are the outcome of Dr. Louis Sambon's investigations into the hitherto unsuspected epidemiological aspect of the disease, and the two main facts, *i.e.*, that cancer is a parasitic disease, and that its control is within reach, strike a note at once original and hopeful.

Much experimental work has been carried out on the parasitic theory of the disease, but it was not until Dr. Sambon had published the results of his field investigations, that the evidence was complete and a definite statement justified.

The investigations imply a direct association between cancer in man and cancer in animals, and the author states, after citing cases in support of this theory, that " it is possible that such cases are by no means uncommon, and they may have escaped notice hitherto because the doctors have been too concerned about the patients (human) to pay any attention to the domestic animals associated with the sick persons."

This is a call to Comparative Medicine and to a closer co-operation between medical man and veterinarian, and, let us hope, of pregnant interest to the layman.

Correspondence

THE QUESTION OF PRIORITY FOR THE NEW PATHOLOGY OF MILK FEVER IN CATTLE.

To the Editor of THE VETERINARY JOURNAL.

DEAR SIR,—

The North American Veterinarian, for February, 1927, gives an interesting review of the work associated with the new treatment of milk fever with glucose. In an article, " Hypoglycemia. and Milk Fever," it appears as if Auger of the veterinary school of Lyons, deserves the credit for the new pathology and treatment of the disease. Priority, and the primary credit attached to the new pathology is, however, due to Leonard Cornwall Maguire, F.R.C.V.S., of Stow-on-the-Wold, Gloucestershire, England. Maguire gave a report of his work in *The Veterinary Record*, for January 16th, 1926, whereas Auger read his paper before *Academie des Sciences* on February 1st, 1926.

G. MAYALL, M.R.C.V.S.

Personal

A conference on " Public Health Meat Regulations " will be held under the auspices of the Sanitary Institute at 90, Buckingham Palace Road, S.W.1, at 5 p.m. on Friday, March 4th, to be opened by Major W. BRENNAN DE VINE, M.C., F.R.C.V.S., D.V.S.M., the Chief Veterinary Officer for the City of Birmingham.

Other speakers will be CHARLES PORTER, M.D., B.Sc., Barrister-at-Law (M.O.H., St. Marylebone); J. S. LLOYD, F.R.C.V.S., D.V.S.M. (Chief Veterinary Inspector, Sheffield); J. A. DIXON, M.R.C.V.S. (Veterinary Inspector, Leeds); W. G. COLLINGE (Past President, National Federation of Meat Traders' Association); Councillor JOHN EDWARDS (Hornsey), and A. E. BONHAM (Chief Sanitary Inspector, Exeter).

The Chair will be taken by Alderman W. PHENE NEAL, J.P. (City of London).

WE regret to hear from the Director, Civil Veterinary Department, Bihar and Orissa, that Captain G. G. HOWARD, I.V.S., Civil Veterinary Department, Bihar and Orissa, Deputy Director-in-Charge of the Orissa Range, Cuttack, died on the 21st January, 1927, as a result of an accident while out shooting.

MR. ROBERT ROE, M.R.C.V.S., Veterinary Officer to the Agricultural Department of the Island of Cyprus, has arrived in England on special study leave for six months in order to take a post graduate course. The principle of allowing Government officials special leave for this purpose is of great advantage not only to the official himself, but to the department which he represents. It is a far-seeing policy and one to be encouraged in every way.

Notices

"VETERINARY JOURNAL" "CLEAN MILK" AND "HUMANE SLAUGHTERING" DEMONSTRATIONS.

As a sequel to the recent visit of the Fourth "Veterinary Journal" Party to the Municipal Milk Distributing Depots of Copenhagen and Stockholm, arrangements have been made, at the kind invitation of the Directors of the United Dairies Co., to visit their large pasteurising and bottling depot at Streatham, on the afternoon of Thursday, March 17th. Mr. Tustin, the Co.'s technical adviser, will meet the party and explain the machinery and the details of the process. The party will afterwards visit premises near by, where a demonstration will be given of the use of Mr. Weinberg's machine to obviate the present method of costing and securing cattle when subjected to the Jewish method of slaughter.

All members of the profession and college students who wish to accompany the party can obtain full particulars upon application, before March 12th, to the Editor, VETERINARY JOURNAL, 165, Church Street, Kensington, W.8.

VICTORIA BENEVOLENT FUND.
AMATEUR THEATRICALS.

IN aid of the above worthy object, an amateur theatrical performance of "The Rotters" (a Tale of a Respectable Family, by H. F. Maltby), under the guidance of Lt.-Col. Percy Simpson, D.S.O., T.D., F.R.C.V.S., will be presented at the West Central Hall, Alfred Place, Tottenham Court Road, London, W.C.1, on Friday, April 8th, at 8 p.m. All seats reserved, 2/6 to 7/6.

Colonel Simpson is well known as a very successful amateur actor who could have readily made his name in the theatrical profession had he not chosen to stick to the veterinary, and as the object for which the trouble is being taken is the support of our own Veterinary Benevolent Fund, it is hoped that the members of the profession will do all in their power to attend and bring their friends to make a good and appreciative audience.

Full particulars can be obtained from Lt.-Col. P. J. Simpson, 5, Bank Parade, North End Road, West Kensington, W.14.

Publishers' Notices

All communications should be addressed to 8, Henrietta Street, Covent Garden, London, W.C.2. Telephone: Gerrard 4646. Telegrams: "Baillière, Rand, London."

Letters for the JOURNAL, literary contributions, reports, notices, books for review, exchanges, new instruments or materials, and all matter for publication (except advertisements) should be addressed to the Editor.

Copy of advertisements should be in the hands of the publishers—Baillière, Tindall and Cox—not later than the 25th of the month, or if proof is required, not later than 23rd.